Nevada Division of Environmental Protection
GUIDANCE DOCUMENT FOR DESIGN OF GROUNDWATER MONITORING WELLS

WTS - 4
(Revised 1996)

Information from the items listed below shall be presented as a minimum in a submittal for monitoring well installation. The Bureau of Water Pollution Control reserves the right to require further information as needed.

All monitoring wells must be drilled by a water well driller licensed in the State of Nevada. Drilling must be conducted in accordance with the requirements listed in NAC 534. Monitoring wells constructed for Division of Environmental Protection projects or pursuant to an Administrative Order require NDEP approval prior to installation.

The attached pages taken from the draft regulations from the State Engineer's regulations for Well Drillers (NAC 534) are to be used in reference to this policy.

Regulatory authority for requirements listed below come from:

NRS 445A.660
NAC 534

Key Words:

NDEP - Nevada Division of Environmental Protection
NDWR - Nevada Division of Water Resources
NRS - Nevada Revised Statute
NAC - Nevada Administrative Code

1. Monitoring Well Casing

   A. Casing must have a minimum inside diameter of 1 inch.

   B. Casing material will be chosen based upon groundwater geochemistry and parameters to be monitored.

   C. All items presented in NAC 534 must be satisfied.

   D. The well must be capped at both ends.

2 Well Log

The well log of the drilling must accompany the as-built drawings for the well. It is recommended that this well log be done by a registered geologist with experience in the field.

3. Monitoring Well Screen

A. The screen in a ground water monitoring well must extend a minimum of one (1) foot above the maximum seasonal high water table.

B. All items of NAC 534 must be satisfied.

C. Well screen shall extend into the groundwater table to a determined depth that is based upon the hydrogeology at the site and parameters to be monitored.

4. Monitoring Well Filter Pack

A. All items of NAC 534 (draft) must be satisfied.

5. Well Seals (Filter Pack Seal, Annular Seal)

A. All items of NAC 534 must be satisfied after consultation with NDEP.

6) Surface Pad

A. The well head must be protected from damage and vandalism. Where subject to traffic there must be an appropriate box which is traffic rated. If subject to flooding, the top of the well should extend a minimum of twelve (12) inches above the ground surface with an appropriate cover. In all locations a locking device must be provided.

B. There shall be a seal surrounding the well casing to prevent the flow of surface water in and along the edge of the bore hole. A bentonite plug of no less than two foot thickness shall be placed directly above the gravel pack. The annulus must be sealed from the bentonite plug to the surface with cement and bentonite mixture. The well cap must be water-tight.

7. Well Siting

Upgradient groundwater monitoring wells shall be located at the most distant upgradient point of the facility property, but not more than 250 feet from the outer edge of the land disposal system.

Downgradient groundwater monitoring wells shall be located no further than 250 feet from the outer edge of the disposal system. These wells shall be placed in the direction of the groundwater flow at the site.

8. Monitoring Well Development

   All monitoring wells must be developed prior to sampling.

   The primary goal in monitoring well development is to reduce the amount of fines entering the well casing during sampling. Examples of acceptable well development shall include:

   Overpumping and backwashing
   Bailing and mechanical surging

   Where applicable, all requirements for well development listed in NAC 534 shall be followed. Care must be taken to allow the seals to set before mechanically developing the well. Allowing 72 hours time elapse between well construction and development should be adequate.

9. All monitoring well closures must be done in accordance with the requirements from the State Engineer (NAC 534).

Recommended reference documents:

Subsurface Characterization and Monitoring Techniques
EPA/625/R-93\/003a 1993

Groundwater R. Allan Freeze/John A. Cherry 1979